

# Vertical Landscraping, a Big Regionalism for Dubai

MATTHEW WILSON

## Abstract

*Dubai's ecologic and economic complications are exacerbated by six years of accelerated expansion, a fixed top-down approach to urbanism and the construction of iconic single-phase mega-projects. With recent construction delays, project cancellations and growing landscape issues, Dubai's tower typologies have been unresponsive to changing environmental, socio-cultural and economic patterns (BBC, 2009; Gillet, 2009; Lewis, 2009). In this essay, a theory of 'Big Regionalism' guides an argument for an economically and ecologically linked tower typology called the Condenser. This phased 'box-to-tower' typology is part of a greater Landscape Urbanist strategy called Vertical Landscraping. Within this strategy, the Condenser's role is to densify the city, facilitating the creation of ecologic voids that order the urban region. Delineating 'Big Regional' principles, the Condenser provides a time-based, global-local urban growth approach that weaves Bigness into a series of urban-regional, economic and ecological relationships, builds upon the environmental performance of the city's regional architecture and planning, promotes a continuity of Dubai's urban history, and responds to its landscape issues while condensing development. These speculations permit consideration of the overlooked opportunities embedded within Dubai's mega-projects and their long-term impact on the urban morphology.*

## Introduction

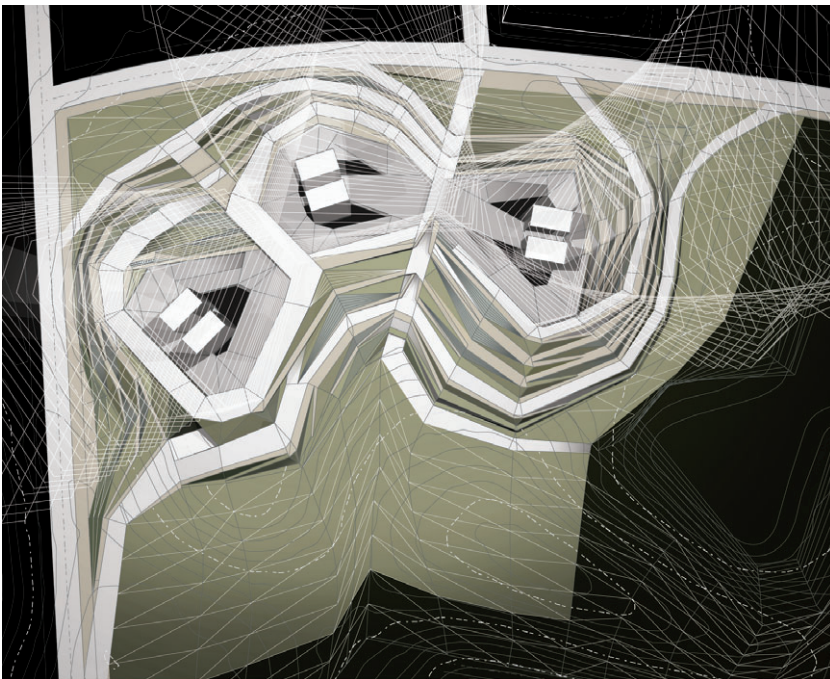
Two recent urban diagnoses — Bigness and Landscape Urbanism — are often seen as opposites rather than as a potentially combined urban-regional strategy. Landscape Urbanism has emerged as an approach to characterizing post-industrial landscapes; it offers flexible holistic methodologies for delivering phased large-scale landscape projects (Corner, 2002). On the other hand, Bigness has become an approach to rapid urbanization through 'anti-architectural' mega-scale projects common to globalizing cities; it compacts development, offering the potentials of integrated urbanization (Koolhaas, 1997). In this essay, the tower typology and Landscape Urbanism are discussed as a combined strategy called 'Vertical Landscraping'.

Vertical Landscraping builds upon James Corner's (2002) notion of 'Landscraping'. But instead of focusing on his emphasis on the 'character' of ecologic voids that order the city, Vertical Landscraping focuses on the methods of initiating voids. Thus, while Landscraping more often suits cities that are returning to the landscape, Vertical Landscraping provides an ecologically and economically linked Bigness that grows with the urban context. Its strategy is to develop towers that scrape the landscape of low-density sprawl, condensing the urban fabric through infrastructurally integrated, phased

tower development scenarios that create ecologic voids. Gradually, these ecologic voids reconfigure the city, forming an ecologic urban region.<sup>1</sup>

Vertical Landscaping provides urbanists with opportunities that are often overlooked; its discussion seems timely in light of the global economic downturn and its impacts upon the global architecture and urbanism of the tower typology. It might prove suitable to the myriad cities and regions; but under its precepts, Bigness must adapt and respond to the burdens of the region, or the specific processes on the ground: urban, environmental, socio-cultural, perceptive, time-based, global-local, multi-scalar, infrastructural, ecological, economic and political. These conditions vary for each city and each region. Of particular interest is how this strategy might inform the urban morphology of the 'city of Bigness', Dubai.

The significance of this study for Dubai is that until the global economic downturn it appeared as if the city was, through its mode of rapid tower urbanization, implementing a kind of Vertical Landscaping without realizing its full potential. What was lacking was a way of thinking about a Bigness that could adapt to the unpredictable nature of the global economy, create localized accelerated expansion and generate a condensed, infrastructurally integrated, urban fabric. This essay is a response to these issues, bringing about a new paradigm — a regional, Landscape Urbanist box-to-tower typology called the 'Condenser' (see Figure 1).<sup>2</sup> The Condenser's time-based, global-local growth strategy fosters a breed of Big Regionalism. It promotes a continuity of Dubai's urban history; it builds upon the environmental performance of the city's regional architecture and planning; and it responds to landscape issues, allowing one to consider the overlooked opportunities embedded in the 'mega-project'. Accordingly, this essay describes the urban-regional and ecological processes of the Condenser typology, which



**Figure 1** Three interlocked Condensers – test site three (drawing created by author)

1 Here 'ecologic' encapsulates the environmental, socio-cultural and perceptive.

2 Additional images may be found in the online version of this article under the link 'Supporting Information'.

contribute to a greater Vertical Landscaping strategy. The ideas herein serve not as a perfect, crystallized, solution, but merely a template for acknowledging Dubai's negative press, and speculating about the future.

## Condensing landscape urbanism

This essay forms part of a design research project called 'Vertical Landscaper'. The project sets out to build upon concepts promoted by Landscape Urbanists. Of particular importance is the term 'Landscape'. Using the paintings of Gerhard Richter to depict 'scraping' as a by-product of Bigness, Rem Koolhaas (1997: 516) states that the 'containers of bigness will be landmarks in a post-architectural landscape — a world scraped of architecture in the way Richter's paintings are scraped of paint . . . Bigness surrenders the field to after-architecture'. Jim Corner (2002: 123) later rationalized 'scraping' as a strategic opportunity to order the city through the maintenance of minimal ecologic voids, positioning his argument in reference to the de-colonization of Detroit (where the once bustling motor-city centre is dissolving into the landscape) but also stipulating a polar opposite, anti-colonization, where 'the expansion of urban areas is needed to preserve or retain sectors of empty space'. Clearly, this entails strategies that densify urban areas. Following this passage, however, he asks: 'what character or program could be assigned to such reserves? And what mechanisms might be deployed to ensure the integrity and longevity of such spaces?' (*ibid.*). Landscape Urbanists have thus had a growing inclination to enquire upon the 'essence' of these voids, what they might be and how they might be used over time. Accordingly, Corner notes that a landscape that orders the city is an ideal situation. However, Graham Shane (2006: 63) adds: 'The recent discourse surrounding landscape urbanism does not yet begin to address the issue of urban morphologies or the emergence of settlement patterns over time'. From these cues emerge the impetus of this study, specifically: how Big Regionalism might actively implement 'anti-colonization' schemes in globalizing cities over time.

In revisiting Richter's scraped paintings once more, we might consider his process, focusing on the multi-coloured heaps of paint massing up in front of his blade. One can imagine these heaps as urbanism scraped into a tower envelope, each stacked colour representing a zone of processes once strewn across the urban region. Corner points to these ideas, referencing Koolhaas' Puntstad (Point City) project, where Koolhaas (1997: 891) speculates on how he might reconfigure the Netherlands: 'Instead of permanent hand wringing we can systematically, deliberately, intentionally fabricate a Western Metropolis, and at the same time create emptiness — a reservoir of void in the rest of the country'. With regard to these voids, Corner (2002: 123) adds that 'their very existence is dependent upon the density, intensity, and development of their surroundings', but he does not expand upon the methodologies of 'scraping' or how the typologies of Bigness might adapt to accommodate such burdens. And Corner's 'Landscaping' focuses only upon the phenomenon of post-industrial spaces after they have been formed, making only slight reference to what might be called 'Condensing', or the process of making ecologic voids occur in globalizing cities.

Condensing would vertically integrate environmental, socio-cultural and perceptive conditions. Tokyo can be used as a physical reference point that has developed in a vertically integrated way since the 1950s. Alejandro Zaera-Polo (2007: 15–29) posits that it is common for the tower typology to index transport infrastructure in Tokyo: 'The relationship between high-rise buildings and cities is a complex one and is strongly tinged with local flavour . . . Tokyo provides probably the best example of the coupling of transportation infrastructure and high-rises, the main stations on the Yamanote Line have concentrated clusters of high density and skyscrapers; such clusters replicate, graph-like, the patterns of accessibility in the inner-city core'. Sassen refers to this

phenomenon, writing that tower clusters and train stops are often coupled in Tokyo. She notes that over time, a relationship has formed between the tower's *Departo*, or department store, and the underground rail station (Sassen, 2001: 170). Towering above underground stops, along this necklace of infrastructurally linked *Departos*, are high-rise buildings with roof-level greenhouses. The greenhouses provide fresh fruits and vegetables to commuters passing through the *Departo* below. While a distinctive set of circumstances determine each city's development, Tokyo's growth strategies could serve as an example of vertical integration and condensing: housing, commerce, horticulture, infrastructure and daily life. Again, the emphasis becomes the 'strongly tinged, local flavour' of Bigness.<sup>3</sup>

## Dubai's development context

Over the past 30 years, Dubai has witnessed a rapid globalization process with the completion of 458 high-rise buildings. In December 2008, 302 towers were under construction, and 505 additional towers were planned for completion within the next decade (Emporis, 2008). City planners sought to accommodate population growth and a booming tourist industry. Developers cashed in, constructing a landscape of privatized urban spectacles.<sup>4</sup> This turn to the single-phase mega-project would 'organize massive grouped functions' (Banham, 1976: 71).<sup>5</sup> And in light of the global economic crisis, the most significant reported change in these tower statistics was that only 480 towers were planned for construction (Emporis, 2009). This small drop in figures seems trivial, but Dubai's building spree had just peaked and plummeted during the construction of its new city centre. At 202 hectares, it was one of the largest construction sites in the world. This new 'downtown' site is home to the tallest tower in the world, Burj Dubai, standing at 818m tall.<sup>6</sup> But the architectural masterpiece stands alone, as thirteen adjacent towers comprising the new city-centre master plan are now on hold (as of December, 2009). They are, in fact, rumoured for cancellation (as of October 2009), as stakeholders are reported to have 'transferred' their funding away from Dubai's new city centre tower developments (Gillet, 2009).

Single-phase mega-projects carry the risk of cancellation, major delays, lack of infrastructure and a final product that evokes a sense of artificiality and detachment from the culture of the landscape. It can be argued that Dubai's Jumeriah Beach residence project (see Figure 2), consisting of the simultaneous construction of 38 towers over a three-year period, suffered from some of these symptoms. Residents experienced continuous air and noise pollution from the 24-hour construction process and felt trapped (as the site's poor accessibility generated massive traffic jams). Yet, many mainstream press features hailed the development for its scale, ethos, timeliness and the ingenuity involved in such an ambitious endeavour. This project, and the many others like it, were tacitly positioned to promote Dubai as bigger, higher, faster and worth experiencing first hand. But now one begins to wonder about the long-term effects of this building programme, or at the very least what the post-occupancy of singular developments is like on a daily basis.

An online search for Jumeriah's afterglow — post-occupancy — provides one resident's experience: 'No gardens, no clubs, no plants, no window cleaning, no shops . . . the road configuration is truly inconvenient . . . and the elevators have no

3 Carol Willis' (1995) *Form Follows Finance: Skyscrapers and Skylines in New York and Chicago* explores the emergence of New York and Chicago tower typologies and their distinctive urban nature.

4 For 'spectacles' in urban theory, refer to the Situationists.

5 Banham was noting the characteristics of mega-projects.

6 Burj Dubai has been recently renamed as Burj Khalifa, after Sheikh Khalifa bin Zayed al-Nahayan, president of the United Arab Emirates, ruler of Abu Dhabi, and 'man who bailed the financially troubled Gulf city-state out of its debts' (Spencer, 2010).





**Figure 2** Aerial view of the Dubai Marina/Jumeirah Beach project construction (photo courtesy of Brent Boden)

worked properly in 3 months' (Skyscraper City, 2007).<sup>7</sup> These factors are likely to have demoralized the isolated 'occupant commuters' who lived there. Indeed, Jumeriah's most affective social space, a Westernized commercial zone, 'The Walk', did not emerge until a greater portion of the development was complete — two years after residents moved in. Its success, however, did not soothe rows over social space, as 300 'angry residents have banded together', to sign a petition to raise their frustration over news that developers were shelving social and recreational spaces. 'Five gyms' were cancelled and a '500-vehicle car park' was being built 'where a beach park' was planned (Harnan, 2008).<sup>8</sup> This unfortunate sequence of towers first, social space second, necessitates reassessment.

Eventually, planning and construction complications unfold onto the urban-regional scale, leading to sprawl, desertification, dependence on foreign arable land for agricultural commodities, and the excessive use of desalinated water supplies to grow food on desert landscapes. Dubai's arable land is estimated at 1% of its total land area (CIA, 2007).<sup>9</sup> Farmland has experienced substantial decline; Dubai's cultivated area for agricultural use was 5,457 hectares in 2000, and only 2,843 hectares in 2005 (DSC, 2004; 2005). This agricultural production accounts for 68.3% of Dubai's water consumption (World Bank, 2007: 147).<sup>10</sup> The USDA (2004: 2) reports that: 'Due to the unsuitable climate, limited water resources and poor soil conditions, the GCC-5 countries must import about 90 percent of its food and feed requirements'. Despite the fact that these statistics do not indicate how the issues play out on the ground, the onus would be on a region-specific Bigness to respond to these issues in some way.

7 Also see: <http://www.dubaiforums.com/dubai-expat-help/hidden-problems-living-marina-t37275.html>

8 Also see: <http://www.thenational.ae/article/20090502/BUSINESS/705029992/1005>

9 This 1% of land used as appropriate for growing crops compares to Yemen's 3%, United Kingdom's 23%, China's 15%, and Oman's 0.1% (CIA, 2007).

10 Direct link: <http://siteresources.worldbank.org/INTMENA/Resources/App-all-Scarcity.pdf>

A 2007 excursion to survey Dubai's farmland provided an opportunity to meet a few of the regions farmers — an increasingly rare breed — who at the time were struggling with these ongoing landscape issues. One farmer stated that, for quite some time, he had 'struggled to find enough water to feed his crops, and resorted to digging extraction wells to find water'. He confided that the diagnosis was becoming common amongst his peers. And when well digging proved ineffectual, he was able to gain assistance; he was allotted 'a tanker truck of desalinated water every six weeks'. But his fields were empty. This was because after a year and a half, the government decided that his land was best re-zoned for the development of hotels and eco-resorts. Herein lies the difficulty — where climactic conditions, building programmes, urban sprawl and the economies of trade, tourism and Bigness complicate landscape issues.

The year 2005 was a highpoint for Dubai's conference and tourist industries. 'Gitex [a consumer tradeshow] has sparked a sharp increase in hotel occupancy in Dubai, with most hotels saying they are 100 per cent full during the five-day exhibition' (*Gulf News*, 26 September 2005). The average for hotel occupancy in 2007 was 84.4%, and 72% in 2009 (DSC, 2008; 2009). This decline is important to note, as Dubai largely relies on the economies of the service sector, real estate, finance and tourism — not on oil (Worth, 2009). An ongoing commitment to understanding these relationships will reveal the broader, long-term, contextual issues that emerge in the city, and how the economy will affect urban-regional ecology.

In 2009, Dubai was the focus of negative press exposure. And when considering the global economic downturn, one can only speculate upon the fate of Dubai's near-complete buildings. Consider the gamut: the prospects of sudden recovery and a sustained economy, versus apocalyptic visions of abandoned office towers and vacant hotels. Coverage of massive lay-offs, expatriate exoduses and reports of luxury sedans found abandoned in Dubai City airport were prevalent (Worth, 2009). One recent *Al Jazeera* interviewee put this into the context for the building industry. When asked about the ongoing construction of the Dubai World projects he said: 'Who will live there, who will do business there? The problem is that maybe they will have to scale down their projects massively. I think it will take years, if not decades, for the buildings to be completed and fully occupied' (*Al Jazeera*, 2009).<sup>11</sup> Other reports state: 'Half of all the UAE's construction projects, totalling \$582bn [£400bn], have either been put on hold or cancelled, leaving a trail of half-built towers on the outskirts of the city stretching into the desert' (Lewis, 2009). Surely, these views paint a pessimistic picture of a short-term economic situation. But one must ask, even in pure speculation, what opportunities are embedded in this landscape? How might a strategy of Vertical Landscaping and the mixed-use Condenser typology have contributed to an ecologic approach — one that responds to Dubai's economy, tourism, infrastructure, landscape issues and the prospects of building and unbuilding the city?

## Box-to-tower

As a design research project, the 'Vertical Landscaper' encourages integrated thinking, mediating global-local dialectics. Its Big Regional principles enable the Condenser to work across multiple scales, forming ecologic relationships between Dubai's urban-regional morphology and its nested architectural parts over time. As a 'box-to-tower' typology, the Condenser would house flexible capital-generating mechanisms and infrastructures allowing towers to grow upward as the urban context matures. This enables its different permutations to flex, adapt and grow — densifying in response to its context, its economy, tourism, its people, its history and its culture. In effect, this is not a singular isolated architectural application with a singular site set in a prescribed

11 Also see: Dubai bail-out from Abu Dhabi less than thought <http://news.bbc.co.uk/1/hi/business/8466420.stm>

formalist language; this is an urban growth concept. It is conceptual model for Dubai tower development where the seeds of tower urbanism do not always sprout a tower.

The box

Vertical urbanism begins with the way that towers hit the ground. The Condenser's first phase, as a 'box', ties into ecologic and economic interdependencies that spark urban development.<sup>12</sup> Addressing economic interdependencies, the 'box' is flexible space, configured for various short-term functions dependent upon urban necessity, or deficiencies in the urban fabric (i.e. lack of x, y or z).<sup>13</sup> The 'box' therefore generates 'tower' capital to create social spaces; it tests the potentials of expansion and vertical densification. (see Figure 3). For instance, the Condenser might foster local big-box retail, which becomes the financial foundations of a vertical phase, growing hotels, offices and social 'flux' spaces above, in tower format. Or it might expand horizontally and connect to another Condenser with a related function. For instance, three Condensers connecting at the 'box' level might house three key attractors, such as a souq and conservatory, a hotel lobby and atrium, and a pocket park and parking garage.

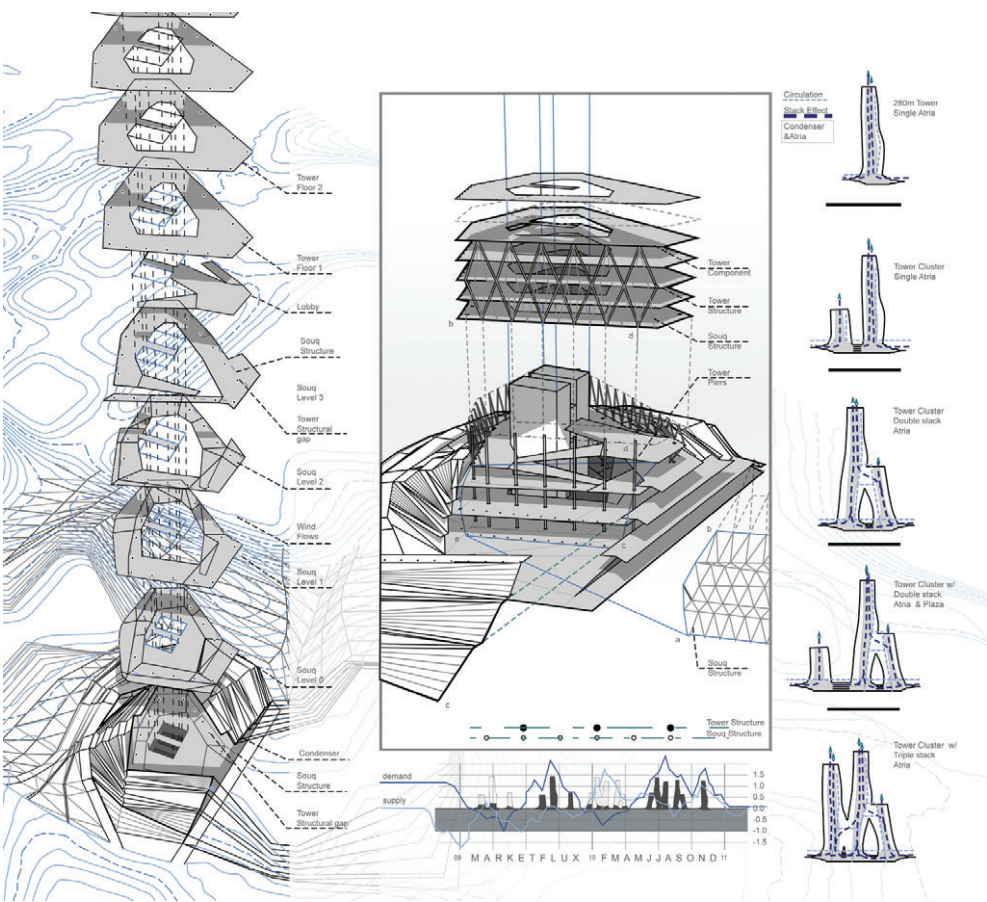


Figure 3 Box-to-tower diagram (drawing created by author)

12 'Ecologic and economic spark' is noted in reference to the conditions that create urbanism, as posited by Edward Soja in Postmetropolis (2001: 12–13).  
13 Deficiencies may be revealed through surveys and mappings (see Figures 5 and 6).



As a general singular concept, 'box-to-tower' typology precedents are not unheard of. The most notable examples are Hearst Tower, New York, and the United States Custom House, Boston. In each case, a box typology was built only to become a tower decades later (Fenton, 1985; Lau, 2008).<sup>14</sup> As a Big Regionalist project, the Condenser addresses three ecologies: environmental, socio-cultural and perceptive. First, it responds to Dubai's environmental ecologies through its climatic performance, blurring passive and progressive approaches. For instance, it might germinate plants for climate control and food consumption by filtering humid wind flows, sunlight and seawater. These natural elements, combined in uncommon ways at the outer wall, cool the Condenser's, open-air, full-height atrium.<sup>15</sup> While taking these cues from the stack effect ventilation strategies of Dubai's traditional wind towers, the Condensers might also learn from the city's historic urban fabric, oriented towards the prevailing breeze to enhance indoor cooling. Second, the Condenser responds to socio-cultural ecologies. In one instance, it might house social spaces similar to traditional open-air souqs, forming the lower lobby levels of a tower atrium. Yet, the Condenser could house office space, a mall, regional trading spaces, cooperative gardens and markets, cooling seawater walls, horticultural terraces, recreational space, a parking helix and storage spaces. Through these spaces and their processes, the Condenser acclimates to the urban context, preparing for vertical densification. Its flexible spaces and their functions therefore adapt to the needs of each neighbourhood, providing a sense of daily life. This ethos lends the Condenser to a greater perceptive ecology, as the transformation from a 'box typology' to a 'tower typology' grows over multiple construction phases. Effectively, the open-air box typology establishes itself as an urban attractor, providing a span of rented spaces, testing the possibility of vertical densification, synchronized with urban age and economic fluxes.

The Condenser's form is generated by each site's infrastructure and accessibility needs. It can be thought of as a 'malleable hive' of streetscapes: ramps, roads, sidewalks, spaces, promenades, paths, pipes, ducts, wires and circuits. It is as if the ground has become thickened, bulging — a 'topographical swelling' with a 'box' underneath it.<sup>16</sup> A reference point to this concept is the Helicoide, a 4km-wide streetscape that coils up and around a hill in Caracas, Venezuela. Conceived in the 1960s, it offers access to over 45,000m<sup>2</sup> of commercial space that links to more than 30,000m<sup>2</sup> of park space and pedestrian pathways. The Condenser builds upon this concept to offer greater accessibility; formally, it is a clear deviation from the century-old modern aspiration that architecture should be 'liberated' from the landscape. Hence, the box leaves the realm of 'architecture', blurring urban form with infrastructure and the environment (Ruby and Ruby, 2006: 1–19).

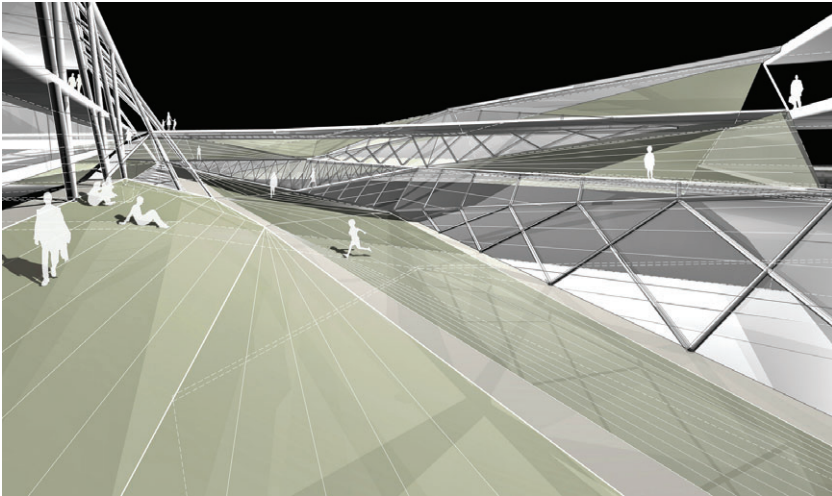
The specificity of each site, and its context, could form the parameters for different kinds of accessibility and different sets of infrastructure. Thus, each site could inform not only the Condenser's form, but also its programme and mode of interior urbanism. The emphasis on permeability thus leads to uncommon exterior spaces, generating a blurry urban fabric: retail pocket parks, terraced street markets and horticultural gardens (see Figure 4). The culmination of these concepts enables the 'Condenser' to respond to its site and its context — hence, there are no set solutions, prescriptions or aspirational master-plans. Pre-configured for an extreme adaptive reuse, a box typology may expand, germinate into a tower typology, stabilize or become unphased and decommissioned.

14 If the Condenser is strategically designed with gaps that allow structural piers to be inserted later, a tower structure may be built upwards from within. These concepts also relate to the ingenious regional building traditions in South America, where each level of a house is built over time as families grow larger. (e.g. a concrete slab is poured but the rebar, or structural reinforcing, for the next floor above is left exposed).

15 The combination of an air permeable 'sea water wall' and 'filter wall' might cool and clean air entering the Condenser (Wilson, 2009).

16 'Thickened ground', as a general concept is covered in Ilka and Andreas Ruby's (2006) book *Groundscapes: the Rediscovery of the Ground in Contemporary Architecture*.





**Figure 4** Fresh vegetable commons (drawing created by author)

### The tower

Abalos and Herreros (2003: 271) conclude that their 50-year analysis of commercial architecture has opened up several research themes, notably ‘the gap between artificial systems of construction and typologies dependent on the natural environment’ and ‘the lack of correlation between the construction technologies and the program’. Buchanan (2007: 5) argues that this constitutes a new agenda for a dying tower typology: ‘Reaching up into fresh air and abundant daylight, tall buildings cry out to be naturally lit and ventilated, bringing energy savings, healthier conditions, and more personal environmental control’. Opening the hermetically sealed high-rise, we make full use of the typology’s fundamental nature. Playing a key role in environmental blurring, the Condenser would cool and filter Dubai’s humid coastal breeze, passing through seawater-cooled façade filters along the outer wall before rising up through the tower atrium. This humid air is condensed in the atrium, producing fresh water and an environment that is conducive to growing plants for food and climate control (Wilson, 2009). Thus, the combination of the open-air Condenser, tower atrium, locally available seawater, sunlight and airflows promotes productive growing spaces over time.<sup>17</sup> In effect, by filtering Dubai’s abundant natural resources, this processual Bigness might alleviate some of the City’s landscape issues, fostering a unique brand of urban eco-tourism.

The Condenser’s main ‘social’, or flux, spaces could be given over to seasonal crop rotation, which is dependent upon the demands for certain crops, the availability of natural resources and their relationship to open-air social, recreational and commercial spaces.<sup>18</sup> These demands create different, and sometimes unpredictable, groupings within the tower leading to an uncommon vertical urbanism. Various sources of natural energy (i.e. seawater, sunlight, air) entering the tower inform the function, operability and organization of its flux spaces, which could be initially grouped in proximity to the tower’s ‘transfer lobbies’, (they become a destination).

<sup>17</sup> The spaces that mediate the inner and exterior environment do so through an adaptation of seawater green house technology developed by Lightworks, London. Lightworks developed the Seawater Greenhouse specifically for arid coastal environments; they have built working prototypes throughout the Middle East. To see how the Seawater Greenhouse processes might hypothetically be adapted to the tower typology, see Wilson (2009).

<sup>18</sup> Imagine the seasonality and flexibility of Andrea Branzi’s *Agronica*, scraped, stacked vertically.

As seasonality is introduced into the intricate inner workings of tower typology, there is a shift from modern aspirations towards an uncommon, postmodern interior urbanism.<sup>19</sup> This mode of interior urbanism constructs different social patterns between the environment, farmers, residents and visitors, weaving into a 24-hour cycle of events (e.g. office and retail hours, social events, harvest times, restocking, etc.). By the nature of these processes, the tower becomes burdened with being more flexible and adaptive while its box must provide a greater accessibility at ground level. As a result, the Condenser's embedded infrastructure becomes exposed and responsive, altering the way that towers interface with the ground. This deviates from the typical relationship that towers have to social life and the metropolis. Accordingly, a relationship is formed between the way towers touch the ground, control the climate, grow food, condense development, and create spaces and products that have a connection to the urban region.

## Testing the field

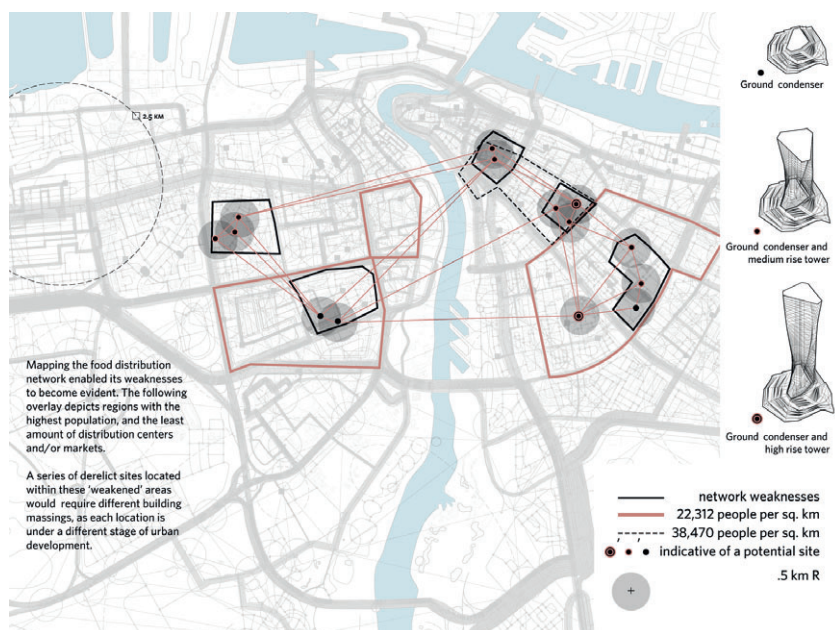
Bigness burdens the city and the region. As a concept, the Condenser typology emerges as a response to Dubai's recent mode of tower urbanization, and, as we have seen, its effects on the region. These relationships were explored in a digital 3-D model of Dubai, where a citywide network of Condensers was tested. These diagrammatic explorations allowed experimentation as to how different urban conditions might feed back into the evolution of each Condenser. This design approach prevented the unnecessary urge, and haste, to subscribe to the fashions of 'architecture'.

Ten test sites were chosen for their distinctive contextual characteristics, such as: urban age and density; proximity to specific types of buildings such as malls or towers; and proximity to environmental or geographic features, such as the coastline, the creek or the heart of the old city centre (see Figures 5 and 6). Recognizing that the Condensers were situated in different parts of the city that were developing at different speeds brought about the concept of a tower that grows in response to changing environmental,



**Figure 5** Burdens of 'market' based transport in Dubai (map created by author)

19 One might also consider 'flux spaces' as a way to slowly turn a building back to the landscape.



**Figure 6** Linking empty sites and food distribution (map created by author)

socio-cultural and economic patterns. Underpinning this exploration were thoughts on how the fully matured Condenser might be decamped or decommissioned. The fact that the Condenser is tied to environment means that horticultural flux spaces could be used as a way to slowly return it to the landscape. A horticulturally driven decampment would slowly and systematically decolonize the unrented tower Condenser — a gradual unbuilding — that feeds the box and the streets below: vertical ecologic voids.

With the intention of creating a Dubai tower typology that mediates the environment and addresses Dubai's landscape issues, the Condensers were situated on site for a series of environmental simulations (see Figures 7 and 8).<sup>20</sup> 4d site models and wind simulation vectors pushed the kinetic prototypes into shape, superseding figure-ground analysis. In effect, the computational fluid dynamic simulations could inform the tower form and its organization. This is a single example in which an old passive environmental strategy was enhanced by computation, as the prototype's form became a response to its surrounding context during each phase of expansion and vertical densification. Another example included a day-lighting analysis aimed at introducing seasonality into the tower typology. This would enable an influx of unrented spaces to be transformed into social spaces used for growing different types of plants at different times of the year (Wilson, 2009).<sup>21</sup> In effect, these speculations mean that post-occupancy evaluations could link with the economic, social and ecological processes of the region.

The Condenser was looped into relationships spanning across multiple scales. This approach used passive and progressive strategies, ranging from the urban-regional scale, down to a particular floor plate and its programme. For instance, by animating the Condenser's vertical growth in a digital processual environment (computational fluid dynamics simulations), its form could be made to flex to capture greater amounts of fresh air and sunlight. This process enables the towers to redistribute and deliver wind flows and freak fog occurrences to the tower core by drawing filtered air

<sup>20</sup> For a modern urban planning precedence based on wind studies, see Ludwig Hilberseimer's *The New Regional Pattern* (1949).

<sup>21</sup> Other circumstances might also determine the tower massing and materiality such as the economic conditions and capital generated, as noted in the section 'The box'.







## With or without Big Regionalism?

The concepts discussed thus far allow one to consider the opportunities embedded in Dubai's 'mega-projects'. As we have seen, the Condenser acts as a nested component part in a greater Vertical Landscaping strategy — a mediator between the architectural and the regional. This is a theme that serves to create a greater 'local flavour' for Dubai's Bigness, through the tenets of Big Regionalism: urban-regional, environmental, socio-cultural, perceptive, time-based, global-local, multi-scalar, infrastructural, economic and political.

However, the Condenser does not in itself answer the question as to what will become of existing towers if the economy continues to spiral downward. Inevitably it could be argued that the strategy of Vertical Landscaping, minus the Condenser, has been tacitly underway in Dubai, albeit inadvertently. In such a situation, clusters of towers would be, and have been, built. Via economic crisis, there would be a massive oversaturation of Dubai's real-estate market, another common attribute. Urban sprawl, desertification and a lack of public outdoor social space would also be prevalent. But what have been slow to develop are the economic, political and geographic conditions that encourage densification. Such conditions would prompt a radically overwhelming urge to abandon Dubai's established residential and commercial areas in exchange for an (inexpensive) high-rise, mixed-use, urban experience packed within Dubai's existing tower developments. To work, Dubai residents would have to supplant their detached homes for high-rise living. This would make way for the demolition of the existing urban sprawl to create ecologic voids over time. From this perspective, Vertical Landscaping seems highly reminiscent of 'towers in the park' urbanism. In effect, the concept of the Condenser and its 'Big Regionalism' are a critique of Le Corbusier's modernist tower schemes, which could have sprouted tall anywhere, anyplace (Paris, Barcelona, Rome, Algiers, Rio de Janeiro, Buenos Aires).<sup>22</sup> This is germane to our theme; without testing the regional flexibility, adaptability and responsiveness of the Condenser, the concept of Vertical Landscaping falls out of 'Big Regional' activity; it becomes only understood as a modernist side effect, an urban phenomenon, a Cartesian Ville Radieuse.

As a final thought, despite the ups or downs of the global economy, Dubai's mode of urbanism will not return to the purely local traditional models of the 1940s, nor will it become purely global. Hence, the Big Regionalism of the Condenser speculates upon a different approach to Dubai's future development — rejecting the fixities of master plan and architecture — steeping its finest flavours: big, regional, global and local.

**Matthew Wilson** (Wilson.M.Ryan@gmail.com), Flat 1, 364 Garratt Lane, Earlsfield, London SW18 4ES, UK.

## References

- Abalos, I. and J. Herreros (2003) *Tower and office: from modernist theory to contemporary practice*. MIT Press, London.
- Al Jazeera News (2009) Abu Dhabi gives \$10bn to Dubai. 14 December [WWW document]. URL <http://english.aljazeera.net/news/middleeast/2009/12/2009121454243401178.html> (accessed 14 December 2009).
- Banham, R. (1976) *Megastructure: urban futures of the recent past*. Harper & Row, New York.
- BBC (British Broadcasting Corporation) (2009) Views from Dubai: 'The end of the dream'. 27 November [WWW document]. URL [http://news.bbc.co.uk/1/hi/world/middle\\_east/8381363.stm](http://news.bbc.co.uk/1/hi/world/middle_east/8381363.stm) (accessed 27 November 2009).
- Buchanan, P. (2007) The tower: an anachronism awaiting rebirth. *Harvard Design Magazine* 26, 5–14.
- CIA (Central Intelligence Agency) (2007) The world fact book [WWW document]. URL <https://www.cia.gov/library/publications/the-world-factbook/geos/ae.html> (accessed 20 November 2007).

<sup>22</sup> Koolhaas (1994: 259–61) notes that Le Corbusier proposed the Ville Radieuse for the cities listed.

- Corner, J. (2002) Landscaping. In G. Daskalakis, C. Waldheim and J. Young (eds.), *Stalking Detroit*, Actar, Barcelona.
- Davies, P.A. and C. Paton (2006) The seawater greenhouse cooling, fresh water and fresh produce from seawater [WWW document]. URL <http://www.seawatergreenhouse.com/Downloads/Cooling,%20Fresh%20water%20and%20fresh%20produce%20from%20seawater%20-%20Riyadh%202006.pdf> (accessed 10 April 2007).
- DSC (Dubai Statistics Center, Ministry of Agriculture & Fisheries) (2004) Farms by total area and agricultural land usage — Emirate Of Dubai [WWW document]. URL <http://www.dsc.gov.ae/DSC/webreports/913035879OSI08-02.pdf> (accessed 15 August 2009).
- DSC (Dubai Statistics Center, Ministry of Agriculture & Fisheries) (2005) Active farms by total area and agricultural land usage — Emirate of Dubai [WWW document]. URL <http://www.dsc.gov.ae/DSC/webreports/33124SYB04-06-01.pdf> (accessed 15 August 2009).
- DSC (Dubai Statistics Center) (2008) Hotels and rooms occupied — Emirate of Dubai [WWW document]. URL: <http://www.dsc.gov.ae/DSC/webreports/899445539OSI12-1.pdf> (accessed 3 September 2009).
- DSC (Dubai Statistics Center) (2009) Hotel apartments building and average flats occupancy — Emirate of Dubai [WWW document]. URL [http://dsc.gov.ae/Reports/DSC\\_SYB\\_2009\\_12\\_10.pdf](http://dsc.gov.ae/Reports/DSC_SYB_2009_12_10.pdf) (accessed 3 December 2009).
- Emporis (2008) Tall buildings of Dubai [WWW document]. URL <http://www.emporis.com/en/wm/ci/bu/sk/?id=100485> (accessed 8 December 2008).
- Emporis (2009) Tall buildings of Dubai [WWW document]. URL <http://www.emporis.com/en/wm/ci/bu/sk/?id=100485> (accessed 17 August 2009).
- Fenton, J. (1985) *Hybrid buildings: pamphlet architecture no. 11*. Architecture Press, New York.
- Gillet, N. (2009) Emaar may cancel Burj Dubai towers. *The National* 18 October [WWW document]. URL <http://www.thenational.ae/apps/pbcs.dll/article?AID=/20091018/BUSINESS/710189938&SearchID=73401661928266> (accessed 13 November 2009).
- Gulf News* (2005) Dubai hotels report 100% occupancy. 26 September [WWW document]. URL [http://archive.gulfnews.com/supplements/gitex\\_2005/sub\\_story/183753.html](http://archive.gulfnews.com/supplements/gitex_2005/sub_story/183753.html) (accessed 20 October 2007).
- Harnan, E. (2008) Promised beach park now a car park. *The National* 20 May [WWW document]. URL <http://www.thenational.ae/article/20080520/NATIONAL/463876749/1010/NEWS> (accessed 25 February 2009).
- Hilberseimer, L.K. (1949) *The new regional pattern. Industries and gardens. Workshops and farms*. Paul Theobald, Chicago.
- Koolhaas, R. (1994) *Delirious New York*. Monacelli, New York.
- Koolhaas, R. (1997) *S,M,L,XL*. Monacelli, New York.
- Lau, R. (2008) Partial occupancies for phased and multi-use tall buildings. *Council for Tall Buildings in Urban Habitats Journal* [WWW document]. URL [http://www.ctbuh.org/Portals/0/Publications/CTBUH\\_Journal/PDFs/CTBUHJournal\\_2008-3.pdf](http://www.ctbuh.org/Portals/0/Publications/CTBUH_Journal/PDFs/CTBUHJournal_2008-3.pdf) (accessed 25 October 2008).
- Lewis, P. (2009) Dubai's six-year building boom grinds to halt as financial crisis takes hold. *The Guardian* 20 February [WWW document]. URL <http://www.guardian.co.uk/world/2009/feb/13/dubai-boom-halt> (accessed 25 February 2009).
- Paton, C. (2007) Technical Advisory. Lightworks Ltd. London. (private design review, 20 May).
- Ruby, I. and A. Ruby (2006) *Groundscapes: the rediscovery of the ground in contemporary architecture*. Gustavo Gili, Spain.
- Sassen, S. (2001) The global city: introducing a concept and its history. In A. Lavalou (ed.), *Mutations*, Actar, Barcelona.
- Shane, G. (2006) The emergence of landscape urbanism. In C. Waldheim (ed.), *The landscape urbanism reader*, Princeton Architectural Press, New York.
- Skyscraper City (2007) Jumeirah Beach Residence [WWW document]. URL <http://www.skyscrapercity.com/showthread.php?s=dfd6289e0eb75fefa190638c5c80874&t=407627&page=155> (accessed 20 November 2007).
- Soja, E. (2001) *Postmetropolis: critical studies of cities and regions*. Blackwell Publishers, Malden, MA.

- Spencer, R. (2010) World's tallest skyscraper opens in Dubai. *The Daily Telegraph* 4 January [WWW document]. URL <http://www.telegraph.co.uk/news/worldnews/middleeast/dubai/6932543/Worlds-tallest-skyscraper-opens-in-Dubai.html> (accessed 12 January 2010).
- United States Department of Agriculture, Foreign Agricultural Service (2004) GAIN report: United Arab Emirates exporter guide. Annual for Bahrain, Kuwait, Oman, Qatar and the UAE [WWW document]. URL <http://www.fas.usda.gov/gainfiles/200410/146117877.pdf> (accessed 20 November 2007).
- Willis, C. (1995) *Form follows finance: skyscrapers and skylines in New York and Chicago*. Princeton Architectural Press, New York.
- Wilson, M.R. (2009) Condenser typology: open envelope vertical farming, the extremes of tower urbanism. *Council for Tall Buildings in Urban Habitats Journal* [WWW Document]. URL <http://www.ctbuh.org/LinkClick.aspx?fileticket=KcUasPkNQQ8%3d&tabid=72&language=en-GB> (accessed 4 September 2009).
- World Bank (2007) Making the most of scarcity: accountability for better water management results in the Middle East and North Africa [WWW document]. URL <http://go.worldbank.org/WDPAMJ5290> (accessed 19 January 2010).
- Worth, R. (2009) Laid-off foreigners flee as Dubai spirals down. *The New York Times* 11 Feb [WWW document]. URL [http://www.nytimes.com/2009/02/12/world/middleeast/12dubai.html?\\_r=2](http://www.nytimes.com/2009/02/12/world/middleeast/12dubai.html?_r=2) (accessed 25 February 2009).
- Zaera-Polo, A. (2007) High-rise phylum 2007. *Harvard Design Magazine* 26, 15–29.

## Résumé

À Dubaï, les complications d'ordre écologique et économique sont accentuées par six années d'expansion accélérée, une approche de l'urbanisme figée imposée d'en haut, et la construction en une seule phase de méga-projets emblématiques. Malgré les récents retards de construction, les annulations de projet et les problèmes d'aménagement du paysage, les typologies des tours de Dubaï n'ont pas suivi l'évolution des modèles environnemental, socioculturel et économique. Une théorie de 'Régionalisme à grande échelle' orientée, dans ce texte, une argumentation en faveur d'une typologie de tours associant économie et écologie, appelée Condenser (Condenseur). Cette typologie par étape, 'du cube à la tour', fait partie d'une stratégie plus vaste d'Urbanisme du paysage baptisée Vertical Landscaping (litt. raclage vertical). Dans cette stratégie, le rôle du Condenseur est de densifier la ville, tout en facilitant la création de vides écologiques qui disciplinent la région métropolitaine. De plus, en représentant les principes du Régionalisme à grande échelle, cette typologie offre une approche de croissance urbaine globale définie dans le temps, qui permet d'intégrer le 'Grand' dans un tissu de liens économiques et écologiques au sein de la région métropolitaine, d'utiliser la performance environnementale de la planification et de l'architecture régionales de la ville, de favoriser la continuité de l'histoire urbaine de Dubaï, et de répondre à ses problèmes de paysage tout en condensant l'aménagement. À partir de ces spéculations, on peut étudier les possibilités ignorées qu'incorporent les méga-projets de Dubaï et leur impact à longue échéance sur la morphologie urbaine.

## Supporting information

Additional Supporting Information may be found in the online version of this article:

**Figure S1** Physical model of Condenser — test site three (created by author)

**Figure S2** Interview with local farmer (photo courtesy of Sam Chiu-Yu Yang)

**Figure S3** Extraction well and irrigation (photo by author)

**Figure S4** Re-zoned farmland (photo by author)

**Figure S5** Circulation concept

**Figure S6** Pocket park (drawing created by author)

**Figure S7** Terrace street market (drawing created by author)

**Figure S8** Flux space growing loop diagram

**Figure S9** Environmental flows linking to a local economy

**Figure S10** Facade use mapping (daylight analysis) helps determine what plants should be located where

**Figure S11** Seasonal flux spaces near transfer lobbies

**Figure S12** Massing tests

**Figure S13** Test site three, phase one speculations — dark grey forms are over 13 storeys high

**Figure S14** Test site three, phase three speculations

**Figure S15** Test site three, phase five speculations

Please note: Wiley-Blackwell are not responsible for the content or functionality of any supporting materials supplied by the authors. Any queries (other than missing material) should be directed to the corresponding author for the article.